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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/883,276	06/19/2001	Shoichi Osada	0171-0759P-SP	9440

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EXAMINER

ZIMMER, MARC S

ART UNIT	PAPER NUMBER
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1712

DATE MAILED: 08/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/883,276

Applicant(s)

OSADA ET AL.

Examiner

Marc S. Zimmer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 01 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 4-10 is/are rejected.
- 7) ☒ Claim(s) 3 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

***Specification***

The Specification is objected to because there is a disparity in the number of headings in Table 1 and Table 2 wherein Table 1 outlines all of the ingredients added to each of Compositions 1-6 (Examples 1-6) and Comparative Compositions 1-3 and Table 2 provides data pertaining to the physical properties measured in Compositions 1 to 6 and Comparative Compositions 1 to 5. Insofar as the materials making up Comparative Compositions 4 and 5 were not disclosed, the physical properties associated with these compositions cannot be placed in proper context. Therefore, entries 4 and 5 should be removed from Table 2.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2 and 4-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maeda et al., U.S. patent # 6,190,787 in view of Shiobara et al., JP 10-324791.

In traversing the Examiner's rejection of claims 1-6 over the combination of Maeda and Shiobara, Applicant offered up two primary observations. First, it was pointed out that Applicant had established criticality for the nitrogen content recited in claim 1 in their original disclosure with Comparative Examples 1 and 2, which highlight the deleterious effects of nitrogen content that is too low and too high respectively. This point was almost certainly offered due to the Examiner's failure to show that the

combination expressly satisfied this aspect of the invention. (The Examiner originally stated only that one of ordinary skill would adjust the triazine content , and thus the nitrogen content, as a matter of routine experimentation in view of Shiobara's teaching of an improvement in flame retardance resulting from the utilization of nitrogen-substituted curing agent.)

Further, it appears that Applicant is suggesting that an unexpected enhancement in the flame retardance of an epoxy resin-based composition is observed when a molybdate compound and a epoxy resin or curative having nitrogen therein are used in concert as the Declaration accompanying Applicant's response compares only the flame retardance of compositions that are devoid of either the molybdenum component (comparative Example 1) or nitrogen content in the phenolic curing agent (comparative Example 2) with one featuring both of these materials.

The Examiner will address the second of these points first. It does not seem particularly unexpected that an epoxy resin composition containing only zinc molybdate as a flame retardant would benefit from the replacement of one of the nitrogen-free epoxy resin or the nitrogen-free phenol curative with a structurally homologous compound that has some degree of nitrogen heterocycle incorporation insofar as Shiobara teaches an improvement in the flame retardance of an epoxy resin composition that is realized when nitrogen is incorporated into either the base resin or curative. Indeed, there is no evidence that the enhancement is anything other than the additive effect of adding an organic component that, itself, inherently possesses a flame retarding characteristic to an epoxy composition containing a flame retarding filler, in

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this instance a molybdenum-based compound. Also, synergism is difficult to ascertain considering the qualitative scale used to measure flame retardance. That is, flame retardance is not characterized in terms of a number where, for example, an observed ten-fold increase in flame retardance might be construed as a demonstration of synergism.

As for Applicant's showing of criticality, it is notable that the combination of references would provide a composition possessing a level of nitrogen content that substantially overlaps the mandated range. Consider, for instance, Example 1 in the Maeda reference wherein the composition is comprised of 23.2 parts of an epoxy resin and 13 parts by weight of the phenolic curative. If the phenol component were to be replaced with an analogous compound having 20% nitrogen content by weight (*Shiobara* provides for anywhere between 5 and 20 wt.%) due to the incorporation of nitrogen heterocycles, than the nitrogen content in the combination of epoxy and phenol resin would be:

$$13/13 + 23.3 = 0.358,$$

which represents the weight contribution of phenol to mixture of phenol and epoxy resin, and

$$0.2 \times 0.358 = 0.0716 (\times 100\%) = 7.16\%$$

which represents the weight contribution of nitrogen to a mixture of phenol and epoxy resin.

Accordingly, this embodiment of the invention would satisfy all of the limitations of the claimed invention. Moreover, if the nitrogen-containing phenol resin replacing the

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phenol curative of Example only had 5% nitrogen content by weight, which is the lower end of the range advocated by Shiobara, than the nitrogen content would then be:

$$13/13 + 23.3 = 0.358$$

which represents the weight contribution of phenol to mixture of phenol and epoxy resin, and

$$0.05 \times 0.358 = 0.0179 (\times 100\%) = 1.79\%$$

which represents the weight contribution of nitrogen to a mixture of phenol and epoxy resin. Clearly, the range taught by Shiobara is fully encompassed by the range presently disclosed. Applicant's illustration of criticality is, therefore, of little consequence inasmuch as the combination does not contemplate a nitrogen content outside of that required by the claim.

Claims 7-8 are similarly rejected because the range calculated above (1.79-7.16 wt.%) using Example 1 from Maeda wherein the phenol curative that is devoid of nitrogen is replaced with a phenol of the type disclosed by Shiobara substantially overlaps the range set forth in claim 7. Claim 8 recites the same limitation as rejected claim 6.

As for claim 9, the act of combining ingredients (A) through (D) in the specified amounts is disclosed by the combination wherein *Maeda* teaches the addition of (A), (C), (D), and (B) a phenol resin not containing nitrogen and Shiobara modifies *Maeda* by recommending the substitution of a nitrogen-containing phenol for (B). Applicant's objective of improving the balance of flame retardance and hardness would seem to be accomplished by judicious the selection of the materials, as opposed to by blending the

materials in a particular sequence or under special conditions. Therefore, it is the position of the Office that the recited objective is inherently satisfied by the combination. Likewise, the limitations of claim 10 are inherently satisfied insofar as the materials and the process by which they are combined are the same.

Because the Examiner's basis of rejection has changed, this rejection will not be made final.

***Allowable Subject Matter***

Claim 3 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. *Maeda* does, in fact, teach an epoxy resin having nitrogen therein but provides no guidance as to how much nitrogen content is appropriate. Further, the combination already requires a phenol crosslinking agent having nitrogen hence one of ordinary skill probably would not be motivated to use the nitrogen-containing epoxy resin.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc S. Zimmer whose telephone number is 703-605-1176. The examiner can normally be reached on Monday-Friday 8:00-4:30.

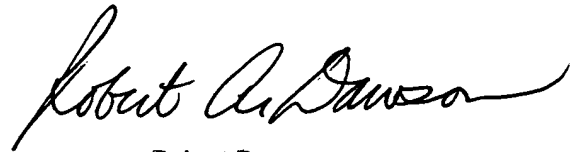
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Dawson can be reached on 703-308-2340. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

August 4, 2003

A handwritten signature in black ink, reading "Robert Dawson". The signature is fluid and cursive, with a long horizontal stroke at the end.

Robert Dawson  
Supervisory Patent Examiner  
Technology Center 1700